century man should surely be an inducement to action rather than a deterrent. The value of simultaneous expeditions working in friendly rivalry is in such a case far greater than that of consecutive or isolated work.

HUGH ROBERT MILL.

ERNST CHRISTIAN JULIUS SCHERING.

On November 2, 1897, as already announced in NATURE, Göttingen lost, at the age of sixty-four, its senior mathematical professor, Ernst Christian Julius Schering, best known as the editor of Gauss's works.

Prof. Schering's life presents one curious feature, rare in the German academic world. Göttingen was the only University with which as student, teacher, or professor he had any connection. The forty-five years of his life there go back to the days when Gauss, Wilhelm Weber and Dirichlet still lived and taught. Although the first of these was to exercise paramount mastery over Schering's future, we can trace the influence of each in his life and writings. Schering's published work deals entirely with subjects in which his celebrated teachers were pioneers—theory of numbers, non-Euclidian geometry, hydrodynamics, electricity and magnetism. As far as one can judge, Schering's personal predilections were for a strictly analytical treatment of pure mathematics; the force of circumstances, however, directed part of his energies to applied mathematics and practical physics. He is said to have shown great mathematical promise at school at Lueneborg and at the Polytechnikum at Hanover; so much so that he abandoned his intention of becoming an architect, and went up to the University in 1852. His studies were crowned with success, and he received prizes both for his Doctor's dissertation, "On the mathematical theory of electric currents," and for his Habilitationsschrift, "On the conformal representation of the ellipsoid on the plane."

In 1860 he became Professor, and was at first engaged in astronomical calculations under Prof. Klinkerfues. In 1863 he embarked on his life-work, the editing of Gauss's papers. Gauss left, besides a large quantity of published work, a mass of notes and of half-finished productions. The work of collecting the published papers, and of looking through, arranging and collecting the unpublished, fell to Schering. From 1863 to 1874 he edited six volumes of collected works, published by the Gesellschaft der Wissenschaft, of Göttingen. He subsequently edited the *Theoria Motus* for the owner of the copyright; this volume, though apparently uniform with the others, does not properly belong to the set, and, the copyright having now expired, the Gesellschaft propose to publish the *Theoria Motus*, together with some still unpublished writings, in a seventh volume of their edition.

It is difficult for any one who has not seen the documents to estimate the labour required to bring them into a form fit for publication. There still remains an enormous mass of unpublished matter, notes on scraps of paper and backs of envelopes, calculations without explanations, statements without proofs, and so on. Until a lingering illness rendered him unfit for much exertion, Schering went on working to bring order into this chaos; but he was unwilling to publish except in a perfected form. Since 1874 no volume had appeared, and, except Prof. Schur, no one had access to any of the original manuscripts.

There was consequently great curiosity about the MSS. when, on Prof. Schering's death, they were brought out and examined. A number of mathematicians have been enlisted by Prof. Klein, and it is hoped that at least the notes on planetary disturbances and the correspondence on non-Euclidian geometry will soon be published. Work that is too imperfect for publication will in future be always accessible at the University library.

Apart from those already mentioned, Schering published numerous papers, mostly to be found between 1870 and 1887, in the Göttingen *Nachrichten* and *Anzeiger* and the *Comptes rendus*. His lectures, which for some years he had done little more than announce, were usually on higher pure mathematics.

In 1868 he became director of the Gauss Magnetic Observatory. His work consisted partly in directing the studies of students in magnetism and kindred subjects, partly in conducting observations, &c. Generally he continued and extended the work as Gauss had planned it. Accounts of his observations, and of various improvements made by him in the instruments, will be found in papers by himself and his brother, Prof. Karl Schering, of Darmstadt.

W. H. AND G. CHISHOLM YOUNG.

NOTES.

On Saturday last, at the Trocadero Restaurant, a dinner was given to Prof. T. McKenny Hughes by his old students, on the occasion of the twenty-fifth anniversary of his election to the Woodwardian Professorship of Geology at Cambridge. Sir Archibald Geikie presided, and covers were laid for old students and friends to the number of sixty-five. An illuminated address was presented to Prof. Hughes by Dr. R. D. Roberts and Mr. A. Strahan as the oldest and earliest of his Cambridge students in the company; and the healths of Prof. and Mrs. Hughes were proposed by Sir A. Geikie. In the course of his speech, Sir A. Geikie alluded to the great and continued growth and success of the Cambridge Geological School, which he characterised as second to none in the world. Prof. Hughes replied, and subsequently the President of the Geological Society (Mr. Whitaker), Sir Henry Howorth, M.P., Prof. James Stuart, M.P., and Dr. Hicks spoke and testified to the value of Prof. Hughes's professional work, and to the wide extent of his personal influence. In addition to those above mentioned, there were present Prof. Wiltshire, Mr. W. Hudleston, Prof. Etheridge, Dr. Henry Woodward, Prof. Lapworth, Prof. Watts, Prof. Ainsworth Davis, Messrs. Teall, Herries, Bauerman, Marr, Harker, Seward, Woods, Reed, Rudler, Kynaston, Mond, and several ladies, many of whom had studied under Prof. Hughes at Cambridge. Letters and telegrams of congratulation from leading Continental geologists were read by Sir A. Geikie. A magnificent silver loving-cup was presented to Prof. McKenny Hughes on Monday, February 28, by his past and present students at Cambridge as a permanent memento of his twenty-five years' work as Woodwardian Professor of Geology, and as a mark of their esteem and gratitude. The cup bore a suitable inscription in Latin, and the arms of the University and of Trinity and Clare Colleges; and an illuminated list of the subscribers was presented with it. Mr. Cowper Reed, Miss Blanche Smith, Dr. Roberts, Prof. Ainsworth Davis, and Rev. W. L. Carter made appropriate speeches, and Prof. Hughes replied.

The Physico-Mathematical Society of Kazan has made its first award of the Lobachévski Prize to Prof. Sophus Lie, of the University of Leipzig, in consideration of the third volume of his work, "Theorie der Transformationsgruppen." The prize, which is of the value of 500 roubles, is to be adjudged every three years for work in geometry, preferably non-Euclidean geometry, and all works published in Russian, English, French, German, Italian, or Latin in the six years preceding the award are eligible. In Prof. Lie's treatise the theory of non-Euclidean geometry has been exhaustively re-stated and re-established in a profound investigation on the space-problem, based on the work of the late von Helmholtz.

IT is announced in the *Times* that the Local Government Board has given orders that the new form of vaccine mixed with glycerine, described in last week's NATURE (p. 391), is to be served out to all vaccination officers, following upon the recommendation of the Special Commission on Vaccination, which recently examined all the great vaccination departments of foreign Governments. This is to be undertaken at once, without regard to the vaccination legislation promised in the Queen's Speech, and will be completely independent of such a measure. Some delay has arisen in sending out the new lymph, owing to the want of a special laboratory for the cultivation of the matter; but this will not now be long delayed, as soon as the Local Government Medical Board is granted funds to purchase or secure a laboratory.

M. DE FONVIELLE informs us that the President of the International Commission for the exploration of the high atmosphere has issued a circular notifying that a conference will be held at Strassburg on March 28, to discuss the results obtained up to this time by the ascent of free balloons to high altitudes, and determining the measures which are to be taken to collect registered observations. The German kite-balloons and American meteorological kites will also be subject for discussion. Invitations have been sent to a number of men of science who are working in similar fields of inquiry. The remarks and discussions will be carried on in three languages—English, French, and German.

ON Saturday last, February 26, the Council of the Society of Arts attended at Marlborough House, when the Prince of Wales, President of the Society, presented the Albert Medal to Mr. G. J. Symons, F.R.S., "for the services he has rendered to the United Kingdom by affording to engineers engaged in the water supply and the sewage of towns a trustworthy basis for their work, by establishing and carrying on during nearly forty years systematic observations (now at over 3000 stations) of the rainfall of the British Isles, and by recording, tabulating, and graphically indicating the results of these observations in the annual volumes published by himself."

THE lists of prize competitions for 1898 and 1899 have just reached us from the Belgian Academy. The international competitions consist in the answering of six questions, for each of which a prize of 600 francs is offered. These questions are the following: (1) Describe the researches already made on critical phenomena in physical science, and complete them by new researches. (2) Expound and criticise the various theories of the constitution of solutions, and supplement them by new researches, especially with regard to the existence of hydrates in aqueous solution. (3) Make some important contribution to the theory of correspondences (*Verwandtschaften*) between two spaces. (4) Original research on digestion in carnivorous plants. (5) Original research on the structure and development of a Platode, with the object of determining whether there are any phylogenic relations between Platyhelms and Enterocœlians. (6) Do the Schizophytes possess a nucleus? If so, what is its structure and its mode of division? In addition, a prize of 800 francs is offered for a solution of the problem of determining the influence exercised by the nitryl radicle NO_2 in aliphatic compounds on the characteristics or functions appertaining to alcohol, haloid ether, oxy-ether, &c. All papers must be written in French or Flemish, and must be sent to M. le Secrétaire perpetuel, au Palais des Académies, Bruxelles, before August 1, 1898. They must bear a motto (not a pseudonym), and must be accompanied by a sealed envelope bearing the same motto outside, and the competitor's name and address inside. Special correctness is required in the matter of quotations. The conditions for 1899 are similar. The questions relate to the thermal conductivity of liquids and solutions, to straight-line geometry, to the variation of latitude, to albuminoid substances in nutrition, to the Apterygota, and to the Upper Eocene period.

THE Rome correspondent of the *Daily Mail* announces that King Humbert has given his permission to his young nephew, the Duke of the Abruzzi, to undertake an expedition in the Arctic regions. The Prince intends to visit Greenland and Lapland, and to study the sea currents and the geology of the locality. He will be accompanied by an aide-de-camp, by Drs. Gonella and Defilippi, who were his companions in the expedition to Alaska, and by a few young naval officers. According to a Reuter telegram from Christiania, the Duke will leave next summer for Spitsbergen in order to explore the country, but the expedition will not start until 1899, and its first objective will be Franz Josef Land. Should the conditions of the ice be favourable, depôts will be established, and an attempt will be made to reach the Pole by means of sledges and dogs. In the event of this proving impracticable, the expedition will confine itself to an exploration of Franz Josef Land. On the advice of Captain Sverdrup, the Duke will ask the Danish Government for a supply of dogs from Greenland, as these are considered to be the best.

THE brilliant lantern slides exhibited by Dr. Isaac Roberts at the Royal Societies' Club on Wednesday, February 23, in illustration of his lecture on "Recent Intelligence from Regions in the Stellar Universe," constituted a striking testimony to his achievements in astronomical photography. The nebulæ and clusters of stars which Dr. Roberts has now photographed number about five hundred, and a list of them, as they are taken each year, is published in his annual Observatory Report in the *Monthly Notices* of the Royal Astronomical Society. It is not too much to say that these photographs contain a mine of new astronomical information which has not yet been worked, and the value of which will increase with years. The pictures represent celestial species awaiting the mind of a Darwin to coordinate them; for they show stellar systems in the various stages of growth from the embryonic nebula to the finished star. Dr. Roberts has himself endeavoured to discover the scheme of stellar evolution as revealed by his photographs, and he placed the results before his audience last week. His method of doing this was soundly scientific. To begin with, he showed a number of photographs of star regions in which the stars could be seen grouped into semicircles, segments, portions of ellipses, and lines of various degrees of curvature. Some of these groups were composed of bright stars of nearly equal magnitude; some of faint stars, also of nearly equal magnitude; while the distances between the stars in the various groups were remarkably regular. Passing from these characteristics of stellar arrangement to photographs of spiral nebulæ, Dr. Roberts pointed out that the nebulous matter in the spirals was broken up into star-like loci, which in the regularity of their distribution resembled the curves and combinations of stars exhibited by photographs upon which no trace of nebulosity was visible. It thus seemed that the curvilinear grouping of stars of nearly equal magnitude gave evidence that the stars had been evolved out of some attenuated material in space by the action of vortical motions and by gravitation. Exactly how the vortical motions were caused, or what has brought about the distributions of nebulosity in the spiral nebulæ, cannot be answered; but the marvellous pictures exhibited by Dr. Roberts establish the reality of the grouping, and furnish students of celestial mechanics with rich food for contemplation.

THE Bishop of London, one of its Vice-Presidents, has consented to preside at the annual general meeting of Governors of the Dental Hospital of London, to be held at the Hospital, Leicester Square, on Thursday, March 17, at 5.30 p.m.

A CORRESPONDENT writes to inform us, with respect to the Lincolnshire Naturalists' Union, that the papers written by members of that association are published in the *Naturalist*, which is issued under the auspices of the Yorkshire Naturalists' Union. While desirous in every way to further the interests of local societies, the demands upon our space render it impossible for us to enter into local controversies, and we must decline to notice any further communications relating to this division among the naturalists of Lincolnshire.

THE following are the arrangements for lectures during March at the Imperial Institute. These lectures will be open free to the public, without tickets, seats being reserved for Fellows of the Imperial Institute and persons introduced by them. Monday, March 7, at 8.30, "The Mineral and other Resources of Newfoundland," by Mr. J. H. Collins; Wednesday, March 9, at 3, "A Demonstration with the Cinematograph of 'Harvesting in Manitoba in 1897,'" by Mr. J. S. Freer; Thursday, March 10, at 8.30, "Colonisation in Canada," by the Marquis Bouthillier-Chavigny; Monday, March 14, at 8.30, "The Alps of New Zealand," by Mr. E. A. Fitzgerald; Monday, March 21, at 8.30, "Siam—Present and Future," by Mr. Frederick W. Verney; Monday, March 28, at 8.30, "On a proposed Railway Connection between India and Ceylon," by Mr. John Ferguson.

FROM a preliminary note in the *Atti dei Lincei*, we learn that Dr. B. Longo, by studying the embryology of the *Calycanthaceæ*, has discovered in their ovules certain characteristics forming a new link between this order of plants and the *Rosaceæ*.

WE are glad to see that an attempt is being made to increase the usefulness of the collections of abstracts which, under the editorship of Mr. J. Swinburne, have for several years constituted the second half of the *Proceedings* of the Physical Society of London. With the title "Science Abstracts, Physics and Electrical Engineering," these records of current research have now, for the first time, appeared in separate form, and the Institution of Electrical Engineers has now co-operated with the Physical Society in their publication. Mr. Swinburne still holds the post of editor, and Mr. W. R. Cooper has been appointed sub-editor. The change is calculated both to extend the circulation and enlarge the scope of these abstracts by introducing matter of a practical nature without detracting from the value of the notices of the more theoretical papers. The numbers may be obtained by non-members from the publishers, Messrs. Taylor and Francis.

IN a communication to the *Philosophical Magazine* for February, on the failure of german-silver and platinoid wires used for resistance coils in tropical climates, Mr. Rollo Appleyard remarks:—"Can metallurgists tell us the difference in constitution and structure between a german-silver wire that decays in four weeks and another that, under similar circumstances, never fails? Or, what is even more important, can they make us platinoid that shall never fail? If they cannot, it becomes necessary to surrender these cheaper and better electrical materials, and fall back upon the more expensive alloys, beginning at platinum-silver. If sufficient time and means were at the disposal of metallurgists, they might discover the secret of permanence in alloys. Germany, with the advantages of a National Laboratory, has already attacked the question, and "manganin" is the result. Its adoption there as a satisfactory alloy is directly due to work done at the Reichsanstalt. But it has yet to be proved that manganin will endure the conditions imposed by the tropics. Moreover, the doubt arises as to whether it is desirable to obtain from abroad material that ought to be produced in our own country. British cable manufacturers are already importing thousands of tons of sheathing wire from Germany; and it seems probable that, for the want of a National Laboratory, instrument-makers will now get their resistance-wire from that same adventurous foreign source."

THE Report of the Meteorological Council for the year ending March 31, 1897, has recently been presented to Parliament. The Office continues to collect data relating to the meteorology of the ocean, and supplies complete outfits of meteorological instruments to officers of merchant ships who are willing to make observations. Her Majesty's ships are also supplied with instruments, and valuable observations are received from officers of the Royal Navy. We have previously noticed the monthly current charts which have been published for several oceans. A work on the meteorology of the Southern Ocean, between the Cape of Good Hope and New Zealand, is in course of preparation; and as no charts for this area have been previously published by the Office, the work will probably be of much value. The results of the weather forecasts continue to show a considerable amount of success; for those published in the morning newspapers a complete or partial succsss of 81 per cent. is claimed for the year in question, while for the special forecasts issued during the hay-harvest, the figures show that 88 per cent. were useful. A still greater success is claimed for the warnings of storms, no less than 91·5 per cent. being justified. For the study of the climatology of the British Isles, the Office continues to subsidise, and to maintain an intimate relationship with, a small number of observatories of the highest class, and to supplement this information by observations from a large number of voluntary stations. The principal miscellaneous investigations during the year refer to anemometer experiments, earth temperatures, and the recently published rainfall statistics for the British Islands.

UNDER the name of "alinit" a new manure suitable for all kinds of grain has been recently introduced to the scientific and agricultural worlds by that enterprising firm of colour manufacturers, Friedrich Bayer and Co., whose name is already so indissolubly associated with nitragin, and the production of diphtheria anti-toxins. The discoverer of this mysterious material is a certain Herr Caron, of Ellenbach; and alinit in its present form is the outcome of four years' laborious experimental investigations on the bacterial flora of different soils, resulting in the isolation of a particular bacillus, upon the presence of which would appear to depend to an important extent the fertility of certain soils. Caron has already obtained striking results on an experimental scale with crops from soil treated with pure cultures of this bacillus—*Ellenbachensis alpha*, as he has called it. Alinit is to be had commercially from the above firm, and is sent out as a creamy-yellow powder, of which the nitrogenous constituents have been ascertained to be 2·5 per cent. Its closer investigation has been made the subject of memoirs by Stoklasa, of Prague, and also Messrs. Stutzer and Hartleb. The bacillus is contained in this powder in the form of spores, and on cultivation is found to belong to the well-known aërobic group of bacteria known as the hay bacilli, resembling very closely the bacillus mycoides so frequently found in soil, and the bacillus *Megatherium*. It appears to grow easily upon all the usual culture media. Before its precise place amongst bacterial fertilisers can be determined, many more elaborate and carefully-conducted experiments must be carried out.

PROF. ARNALDO FAUSTINI contributes to the *Bollettino* of the Italian Geographical Society, which, by the way, appears in a new ornamental cover, a note on the "Appearances of Land" recorded by various voyagers in the Antarctic regions. The paper gives point to some of the strongest arguments for Antarctic research, and summarises the topographical uncertainties which future expeditions must set themselves to clear up.

At the meeting of the Vienna Academy of Sciences, on December 16 last, letters were read from Dr. Steindachner, the Director of the *Pola* Expedition in the Red Sea. Writing at the end of November, Dr. Steindachner reports that deep-sea work was at an end, but that observations along the coast and amongst the islands were being continued as the very unfavourable weather permitted. Valuable collections were made on the Dahalak and Nakra Khor islands, specially in connection with the coral formations and the shallow-water fishes; and the extinct volcanoes and the lava-sheets of Peacock Hill Bay were examined. The *Pola* reached Assab on November 30, and Mocha on December 14, 1897.

M. le Comte P. de Barthelemy publishes a letter in the *Comptes rendus* of the Paris Geographical Society, on the possible lines of communication between Luang-Prabang and the coast, and on the navigability of the Mekong. It would seem that little or nothing can be made of the Tran-Nunh plains as long as they remain in the hands of the present degenerate population; although something might be possible if the Meo population of the mountainous districts took their place. The only part of the Mekong really adapted to navigation is the stretch of 650 kilometres between Vien-Tiane and Savannakhek. The future of Luang-Prabang evidently depends on the speedy realisation of one or more of the numerous railway schemes proposed.

Mr. Porter has just published the tenth part of Messrs. Sclater and Thomas's illustrated "Book of Antelopes." Two more parts, already in a forward state, will finish the account of the Gazelles and allied forms, and bring the third volume to a close. The fourth and concluding volume will be devoted to the Oryxes and Strepsiceres. Altogether the work will contain one hundred coloured plates, about seventy of which were originally prepared under the superintendence of the late Sir Victor Brooke, many years ago, for a somewhat similar work which he had planned, but did not live to accomplish.

In referring to the election of three new members of the Athenæum Club, in the first note last week, the designation of the Club was inadvertently omitted.

Dr. G. Lindsay Johnson writes calling attention to an obvious misprint in the fortieth stereotyped edition of Vega's Logarithmic Tables. The logarithmic sine of 0° 6′, printed as 9·2418771, should be 7·2418771.

Prof. Charles Fabre, of the University of Toulouse, has just completed the second supplement to his well-known treatise on Photography. The new volume deals with the progress made in all branches of the subject during the years 1893 to 1896.

The additions to the Zoological Society's Gardens during the past week include three Black-backed Jackals (*Canis mesomelas*) from South Africa, presented by Mr. J. E. Matcham; a Black-backed Jackal (*Canis mesomelas*) from South Africa, presented by Captain Travers; two Black Spider-Monkeys (*Ateles ater*) from Eastern Peru, a Downy Owl (*Pulsatrix torquata*) from Pará, twelve White's Tree Frogs (*Hyla cærulea*) from Australia, deposited; a Temminck's Tragopan (*Ceriornis temmincki*) from China, a Bearded Lizard (*Amphibolurus barbatus*) from Australia, purchased.

OUR ASTRONOMICAL COLUMN.

Eclipse Negatives.—In order to minimise the risk in returning the eclipse negatives to England from the Eclipse Station at Viziadrug, they were divided into three batches, a complete set being made up in each batch by positives from the other negatives. Two of these sets have already arrived safely in England, and they testify to the clearness of the atmosphere during totality. The smallness of the prominences is very noticeable, both in hydrogen and K (calcium) radiations, a fact which was observed at South Kensington in H_α light on the day of the eclipse. Another conspicuous feature is the intense brightness of some of the coronal streamers at their base. The negatives of the corona also verify the reports from the visual observations, which stated that the general form was like those of 1886 and 1896. The resemblance to the latter is very striking, especially when we remember that it was the north point of the axis which was presented to us at that eclipse; whilst in the last eclipse in January, the south point of the axis is inclined towards us.

Cinematograph in Astronomy.—We have already learnt that the cinematograph was employed with success during the recent solar eclipse, but M. Camille Flammarion has turned it to the further use of exhibiting to a large audience the various celestial movements. He has photographed the heavens at different times from sunset to sunrise with a wide-angled lens in the cinematograph, and as the whole movements during a single night are projected on the screen, and passed through in a few minutes, no very rapid rate of exposing the photographs is required. For showing sunset at one horizon, followed by the movement of the stars and sunrise at the other horizon, and also the movement of the moon amongst the stars, this method has been employed with great success. He proposes in addition to this to photograph the sun-spots, and thus exhibit by their movement the rotation of the sun. For the earth he has constructed a large model, and photographed it with a cinematograph when rotating and illuminated by light arranged so as to represent the sun; this was exhibited at the last meeting of the French Astronomical Society, and was greatly admired.

A Probable New Star.—In *Astr. Nach.*, No. 3476, it is pointed out that the probable new star announced by Espin, and not in the B.D., is, however, in the small edition as an addendum, +32°·1526*a*; 8·0 mag., 7h. 12m. 15·6s., +32° 18′·4 L. This is the same star as recorded by the Rev. T. E. Espin, so in all probability it is another observation of a variable star. An examination of its spectrum, made at South Kensington, at once showed that the star had not a spectrum peculiar to temporary stars, and hence was probably only an omission from the star charts.

Electrolytic Reflectors.—In a paper read before the Institution of Electrical Engineers, and reproduced in *Industries and Iron* for February 18, Mr. Sherard Cowper-Coles describes a method by which a metallic reflector can be made by an electrolytic process. The method is intended, in the first place, for the manufacture of metallic mirrors for use as projectors in search lights, and also to overcome the difficulty that has been experienced in producing a true metallic reflector that will not readily tarnish when exposed to the heat of an arc light; but the same method is also applicable for the production of mirrors for astronomical purposes. The process is, of course, a copying one, and consists in taking a concave surface from a convex mould, so figured as to give the correct curvature to the copy taken from it. In the words of the author, "a glass mould is prepared, the convex side of which is accurately shaped and polished to form a true reflecting surface. On the prepared surface is deposited a coating of metallic silver, which is thrown down chemically on the glass, and then polished so as to ensure the copper backing being adherent to the silver. The mould thus prepared is placed in a suitable ring and frame, and immersed in an electrolyte of copper sulphate, the mould being rotated in a horizontal position. The copper adheres firmly to the silver, and together they form the reflector, which is subsequently separated from the glass mould by placing the whole in cold or lukewarm water, and then gradually raising the temperature of the water to 120° F., when the metal reflector will leave the glass mould, due to the unequal expansion of the two." The concave surface of the reflector thus obtained has a brilliant polish, and requires no further treatment to answer all the purposes of a reflector; but for uses where tarnishing would soon take place, it is further immersed in a bath of palladium ammonium chloride, and a coating of palladium deposited on the concave side; this metal does not tarnish readily, and resists heat to a wonderful degree.

This new method of making mirrors electrolytically would seem to have a promising future before it, for great pains could be taken in making the mould, from which any number of copies could be taken without the usual laborious process of grinding and figuring each individual mirror, and yet each one would have a correct reflecting surface.